

Do Firms Shift Production Across States to Avoid Environmental Regulation?

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Environmental regulation in the U.S. has a decidedly federal nature – the Federal government sets the standards, while state regulatory agencies are responsible for much of the enforcement activity. Furthermore, states are also allowed to set stricter standards than those mandated by the Federal government. With different states facing different benefits and costs from environmental regulation, they could choose different levels of stringency, imposing different abatement costs on manufacturing facilities located in the state. Previous research by a number of authors has examined plant openings, plant closings, and aggregate employment as indicators of firms' responsiveness to differences in regulatory stringency across states.

This paper examines how firms allocate their production across plants located in different states, to see whether they respond to differences in the state's stringency of environmental regulation. The research is based on plant-level data from the Census of Manufactures (accessed at the Boston Census Research Data Center) for all plants in the pulp and paper industry. We aggregate plant-level production data into firm-level records to measure the share of each firm's total paper production that occurred in each state in each Census year. We restrict the analysis to firms that had production facilities in four or more states at some point during the sample period (1967-1997).

We test for the impact of regulation on production shares, using several measures of state environmental stringency. The analysis controls for other state characteristics that might influence production decisions, such as factor prices and quality, industry concentration, and product demand. After testing for the direct influence of regulation, we test whether firms differ in their sensitivity to regulatory pressures, interacting firms' compliance behavior (the fraction of their plants in compliance with environmental regulations) with the measures of state regulatory stringency. We also test whether the industry's characteristics within the state (its share in the state economy or its degree of concentration within the state) affect its response to regulatory stringency – this might occur if state regulatory agencies are “captured” by the major industries in the state.

We find significant impacts of regulation on production: firms allocate smaller production shares to states with stricter environmental regulations. This impact is completely concentrated among firms with low compliance rates: high-compliance firms show no tendency to avoid high-stringency states. The interactions with industry characteristics are less often significant, but suggest that the paper industry is more (not less) affected by regulation in states where it is larger or more concentrated.